

## PATENT CLAIMS

1. A method for determining a mass flow rate of a fluid flowing in a pipe, which method includes the following steps:

- producing vortices, especially Karman vortices, in the flowing fluid by means of a bluff body around which the fluid flows, the bluff body having at least two separation edges, and determining a repetition frequency with which the vortices are produced,
- producing, on the basis of the determined repetition frequency, a flow rate measurement value, which represents a volume flow rate or a flow velocity,
- local registering of a first pressure,  $p_1$ , acting in the flowing fluid at a first measurement point, which is located, with reference to the flow direction, by the two separation edges of the bluff body or downstream from at least one of the separation edges, and
- local registering of a second pressure,  $p_2$ , acting in the flowing fluid at a second measurement point separated from the first measurement point in the flow direction,
- wherein, by action of the generated vortices, at least one of the registered pressures  $p_1$ ,  $p_2$  changes periodically at least with the repetition frequency,
- producing, using the registered first pressure,  $p_1$ , and the registered second pressure,  $p_2$ , a pressure measurement value that represents an average dynamic pressure acting, averaged over time, at least partly in the flow direction, as well as

- producing, using the pressure measurement value and the flow rate measurement value, a mass flow rate measurement value representing the mass flow.

2. Method as claimed in claim 1, wherein the repetition frequency, 5 with which the vortices are produced, is determined on the basis of at least one of the registered pressures  $p_1$ ,  $p_2$ .

3. Method as claimed in claim 1, wherein at least one of the measurement points is arranged at the bluff body or inside of the same.

10 4. Method as claimed in claim 1, wherein a pressure difference between the two locally registered pressures is determined for producing the pressure measurement value.

5. Method as claimed in claims 3 and 4, wherein a differential pressure sensor, especially one arranged within the bluff body, is 15 exposed, especially simultaneously, to the first and second pressures,  $p_1$ ,  $p_2$ , for registering the pressure difference.

6. Method as claimed in claim 4, wherein a pressure difference signal is derived from the locally registered pressures,  $p_1$ ,  $p_2$ , to represent the pressure difference.

20 7. Method as claimed in claim 6, wherein the pressure difference signal is digitized for producing the pressure measurement value.

8. Method as claimed in claim 6, wherein the pressure measurement value and/or flow rate measurement value is/are determined on the basis of a spectral analysis, especially a digital spectral analysis, of the pressure difference signal.

5 9. Method as claimed in claim 1, wherein one of the locally registered pressures  $p_1$ ,  $p_2$  is a total pressure acting in the flow direction and/or a static pressure acting in the fluid.

10. Method as claimed in claim 1, wherein a sensor element in the form of an oscillating body arranged within, or downstream from,  
10 the bluff body is used for determining the pressure difference.